Paper No. 18

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DAVID A. EVANS
and JOHN R. MILLER

Appeal No. 2001-0319
Application 09/005,841[1]

ON BRIEF

Before HAIRSTON, BARRETT, and BARRY, Administrative Patent Judges.

BARRETT, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the

BACKGROUND

The invention relates to a capacitor structure which is asymmetrical because it employs an anode and a cathode of different composition and structure.

Claim 23 is reproduced below.

> 23. A capacitor comprising:
>
> a cathode comprising a cathode coating including an oxide of at least one metal selected from the group consisting of cobalt, molybdenum, and tungsten;
>
> an anode spaced from the cathode coating, the anode having a coating of an oxide of a metal selected from the group consisting of tantalum, aluminum, niobium, zirconium, and titanium; and
>
> an electrolyte disposed between and in contact with the cathode coating and the anode.

The examiner relies on the following references:

Hähn et al. (Hähn)	4,347,084	August 31, 1982
Ahmad et al. (Ahmad)	5,800,857	September 1, 1998
	(§ 102(e) date	September 30, 1996)

Claims 23, 24, 27-30, 34, and 35 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Ahmad.

Claim 25 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Ahmad and Hähn.

to as "Br__") for a statement of appellants' arguments thereagainst.

OPINION

Grouping of claims

Appellants define the following groupings of claims: (1) claims 23, 24, 27, and 34 stand or fall together with independent claim 23; (2) claim 25 stands, but does not necessarily fall, with claim 23; and (3) claims 28-30 and 35 stand or fall together with claim 28.

Contents of Ahmad

Ahmad discloses a capacitor having a first electrically conductive external electrode 111A with one porous electrically conductive coating layer 119, which is deposited on a support material 116, and a second internal, electrically conductive bipolar electrode 111B having two porous coating layers 120 and 131, which are deposited on both sides of the support material 118 (col. 6, lines 29-34; col. 7, lines 29-38; col. 12, lines 45-50). The electrodes are separated by an electrolyte filled gap (col. 6, lines 39-41). As described in connection

energy density and power density are optimized by reducing the thickness of the support material 116 and maximizing the surface area of the coating layer 119 (col. 13, lines 8-12). Ahmad discloses (col. 5, lines 26-43):

> "Electrically conducting support material" refers to any electrically conducting metal or metal alloy, electrically conducting polymer, electrically conducting ceramic, electrically conducting glass, or combinations thereof. Metals and metal alloys are preferred for producing stock units. Preferred metals include, for example, the metals of the following preferred metal oxides listed for the following second electrically conducting materials. The support material should have a conductivity of greater than about 10^{-4} S/cm.
>
> "Second electrically conducting material" (having a high surface area) refers to a porous electrode coating which may be of the same or different composition on each side of the support material. Preferred metal oxides of the present invention include those independently selected from tin, lead, vanadium, titanium, ruthenium, tantalum, rhodium, osmium, iridium, iron, cobalt, nickel, copper, molybdenum, niobium, chromium, ... [Emphasis added.]

As shown in figure 14, both facing surfaces of a cell are shown with porous coatings. Ahmad further discloses that metal carbide coatings can be used to replace the metal oxide coatings and that metal carbides include any of the metals of the Periodic Table (col. 7, lines 14-19).

Claims 23, 24, 27, and 34 (cathode with oxide coating)

"An anticipating reference must describe the patented subject matter with sufficient clarity and detail to establish that the subject matter existed and that its existence was recognized by persons of ordinary skill in the field of the invention." ATD Corp. v. Lydall Inc., 159 F.3d 534, 545, 48 USPQ2d 1325, 1328 (Fed. Cir. 1998). That is, "the [prior art] reference must describe the applicant's claimed invention sufficiently to have placed a person of ordinary skill in the field of the invention in possession of it." In re Spada, 911 F.2d 705, 708, 15 USPQ2d 1655, 1657 (Fed. Cir. 1990). "[An anticipating] reference must clearly and unequivocally disclose the claimed compound or direct those skilled in the art to the compound without any need for picking, choosing, or combining various disclosures not directed to each other by the teachings of the cited references." In re Arkley, 455 F.2d 586, 587, 172 USPQ 524, 526 (CCPA 1972).

With respect to claim 23, the examiner finds that Ahmad discloses a capacitor having a cathode comprising a cathode coating including an oxide selected from the group of cobalt and

anode (FR3). The examiner interprets the statement in Ahmad that "'[s]econd electrically conducting material' (having a high surface area) refers to a porous electrode coating which may be of the same or different composition on each side of the support material" (col. 5, lines 37-40) as meaning that the cathode and anode can be made of different materials.

Appellants argue that Ahmad does not include any direction or suggestion as to which oxide coatings ought to be combined in opposing electrodes of the same capacitor and the absence of any teaching for employing the metal oxides in pairs fails to disclose the claimed capacitor structure (Br10). It is argued that there is no teaching for making a selection from the Ahmad "laundry list" that falls within the scope of the first group of claims and that picking and choosing is an impermissible basis for an anticipation rejection (Br10).

The examiner responds that "[Ahmad] clearly discloses in col. 5, lines 35-47, that the coating on the substrate can be of the same or different composition" (EA7).

We find that Ahmad does not describe the claimed subject matter and, hence, does not anticipate. Ahmad does not describe

coating. Therefore, one skilled in the art is not taught that the cathode and anode coatings should be made of different specific metal oxides and is not put in possession of the claimed invention. The portion of Ahmad relied on by the examiner, "a porous electrode coating which may be of the same or different composition on each side of the support material" (col. 5, lines 38-40), does not state that the coatings on opposite electrodes (cathode and anode) should be different, but states that coatings on each side of the support material can have a "different composition." It is not described what is meant by a "different composition" but, manifestly, since the oxide coatings are on the same support material, it would be impossible to have different material oxides on each side, e.g., a molybdenum oxide one side and a tantalum oxide on the other when the support material is tantalum. Furthermore, Ahmad does not describe a capacitor with cathode and anode having different specific metal oxide coatings. We agree with appellants that the only way to arrive at the claimed subject matter is by picking and choosing from the list of materials in Ahmad without any guidance by Ahmad and that this does not constitute an anticipation.

electrical insulators (Br10-11). It is argued (Br11-12) that Ahmad does not disclose the claimed doubly asymmetric capacitor structure which is asymmetrical not only with respect to the metal oxide coatings, but also by use of a cathode oxide coating that is an electrical conductor and an anode oxide coating that is an electrical insulator (i.e., a dielectric).

The examiner admits that Ahmad's list of "conductive oxides" may include dielectric oxides, "[h]owever, Ahmad defines 'conductive metal oxides' to include oxides (preferable) of tantalum, niobium, and titanium" (EA7).

While not exactly clear, we assume the examiner's position is that Ahmad discloses tantalum, niobium, and titanium oxides whether they are actually dielectric or electrically conductive oxides. We tend to agree. Unless it is shown by appellants that tantalum, niobium, and titanium oxides could be made to be either as a dielectric or electrically conductive oxide, it would seem that the properties of these oxides are inherent and that the disclosure of, for example, a titanium oxide coating is sufficient to anticipate a titanium oxide coating that is a dielectric even if it is described as being electrically

Appellants argue that the examiner's assertion that Ahmad's statement about "a porous electrode coating which may be of the same or different composition on each side of the support material" (col. 5, approx. lines 38-40) teaches a capacitor having a cathode and anode with respective different metal oxide coatings is not supported (Br12). It is argued that all of the examples in Ahmad have symmetrical structures (Br12). It is argued that none of the specific capacitor structures described in Ahmad has an asymmetrical structure with different oxide coatings on the cathode and anode, which, together with the low breakdown voltage of about 1 volt, demonstrates that these capacitors are entirely conventional and symmetrical electrochemical capacitors (Br12).

We do not find where the examiner addresses these particular arguments, but we assume that the examiner's position is that Ahmad's statement that "a porous electrode coating which may be of the same or different composition on each side of the support material" (col. 5, lines 38-40) teaches that the cathode and anode oxide coatings can be different even if there are no express examples.

support material, it would be impossible to have different material oxides on each side, e.g., a molybdenum oxide one side and a tantalum oxide on the other when the support material is tantalum. Thus, Ahmad does not expressly or impliedly disclose different oxide coatings on the cathode and anode, much less the specific choice of oxide coatings. In addition, we agree with appellants that the fact that none of the examples describe an asymmetrical structure with different oxide coatings on the cathode and anode demonstrates that one of ordinary skill in the art would consider Ahmad to describe conventional and symmetrical electrochemical capacitors, not an asymmetrical capacitor.

For the reasons stated above, we find the anticipation rejection to be in error. The rejection of claims 23, 24, 27, and 34 is reversed.

Claim 25

Hähn is applied to show a porous sintered tantalum anode. Hähn does not cure the deficiency of Ahmad with respect to the limitations of claim 23. Accordingly, the rejection of claim 25 is reversed.

teaching of Ahmad that the metal oxides can be replaced by metal carbides (col. 7, lines 14-19).

Appellants argue that the rejection is erroneous for the same reasons as the first group of claims: Ahmad fails to describe expressly or by example any capacitor structure that is asymmetrical with respect to the electrical conductivities of anode and cathode coatings, and Ahmad fails to point to any specific combinations of different cathode and anode coating materials (Br15). Appellants note that the metal carbide of Example 24 does not teach one of ordinary skill in the art to replace only one of the oxide coated electrodes of Examples 1-22 with a carbide coated electrode (Br15-16).

We agree that Ahmad fails to point to any specific combinations of different cathode and anode coating materials, such as a carbide cathode coating and an oxide anode coating of the recited metals. For this reason, we find that Ahmad does not anticipate claims 28 and 35. The anticipation rejection of claims 28-30 and 35 is reversed.

CONCLUSION

The rejections of claims 23-25, 27-30, 34, and 35 are reversed.

REVERSED

KENNETH W. HAIRSTON Administrative Patent Judge	)	
LEE E. BARRETT Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
LANCE LEONARD BARRY Administrative Patent Judge	)	

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